Listing of Claims:

Claims 1-39 (previously cancelled).

40. (Previously Presented) A method of detecting motion in nanoscale structures, comprising:

providing a molecular structure having a rotating arm;

attaching a nanoparticle to the rotating arm of the molecular structure so that the nanoparticle rotates with the rotating arm of the molecular structure, wherein the nanoparticle has a first surface and a second surface, and wherein the first surface has greater area than the second surface;

exposing a light to the nanoparticle, wherein a first surface of the nanoparticle scatters a first polarized wavelength of the light when the nanoparticle is in a first position and a second surface of the nanoparticle scatters a second polarized wavelength of the light when the nanoparticle is in a second position;

filtering the first and second wavelengths of the light through a polarizing filter to detect rotational motion by observing alternating first and second wavelengths of the light.

41. (Previously Presented) The method of Claim 40 wherein the nanoparticle is rod-shaped.

42. (Previously Presented) The method of Claim 41 wherein the nanoparticle is a gold nanorod.

43. (Previously Presented) The method of Claim 42 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

44. (Previously Presented) The method of Claim 43 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.

45. (Previously Presented) The method of Claim 40 wherein the molecular structure is an F1-ATPase enzyme.

46. (Previously Presented) The method of Claim 40 further including the step of disposing a detection DNA strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand, if the target DNA strand matches the detection DNA strand, to form a structural link between the molecular structure and the nanoparticle.

47. (Previously Presented) A method of detecting motion in nanoscale structures comprising:

attaching a nanoparticle to a rotating portion of a molecular structure, wherein the nanoparticle has a first surface and a second surface, and wherein the first surface has greater area than the second surface;

exposing a light to a first surface of the nanoparticle to scatter a first polarized wavelength of the light;

exposing a light to a second surface of the nanoparticle to scatter a second polarized wavelength of the light; and

filtering the first and second wavelengths of the light using a polarizing filter to detect the rotational motion by observing the first and second wavelengths of the light.

48. (Previously Presented) The method of Claim 47 wherein the nanoparticle is rod-shaped.

49. (Previously Presented) The method of Claim 48 wherein the nanoparticle is a gold nanorod.

50. (Previously Presented) The method of Claim 49 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

51. (Previously Presented) The method of Claim 50 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.

52. (Previously Presented) The method of Claim 47 wherein the molecular structure is an F1-ATPase enzyme.

53. (Previously Presented) The method of Claim 47 further including the step of disposing a detection DNA strand between the nanoparticle and the molecular structure, wherein the detection DNA strand hybridizes with a target DNA strand, if the target DNA strand matches the detection DNA strand, to form a structural link between the molecular structure and the nanoparticle.

54. (Previously Presented) A method of detecting motion, comprising:

attaching an anisotropic nanoparticle to a rotating portion of a base structure;

exposing a light to the anisotropic nanoparticle to scatter first polarized and second polarized wavelengths of the light to detect the rotation motion by observing the first polarized and second polarized wavelengths of the light.

55. (Previously Presented) The method of Claim 54 wherein the anisotropic nanoparticle is rod-shaped.

56. (Previously Presented) The method of Claim 55 wherein the anisotropic nanoparticle is a gold nanorod.

57. (Previously Presented) The method of Claim 55 wherein the anisotropic nanoparticle has a first surface and a second surface, and wherein the first surface has greater area than the second surface.

58. (Previously Presented) The method of Claim 55 wherein the first polarized wavelength of the light is longer than the second polarized wavelength of the light.

59. (Previously Presented) The method of Claim 58 wherein the first polarized wavelength of the light is red light and the second polarized wavelength of the light is green light.